

Dipl.-Math. Andreas Fischle

Advanced Numerical Methods – Homework 11.

Exercise 1:

Consider the heat equation given by

$$\begin{aligned}u_t(x, t) &= u_{xx}(x, t) & , (x, t) \in (0, \pi) \times (0, \infty) \\u(x, 0) &= \varphi(x) & , x \in [0, \pi] \\u(0, t) &= u(\pi, t) = 0 & , t \in [0, T].\end{aligned}$$

1. Apply the “method of lines” to discretize in space.
2. Discretize the given heat equation using the explicit finite difference scheme presented in the lecture.